

**CHAPTER 3.12**  
**GEOGRID**

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### **CHAPTER 3.12 GEOGRID**

3.12-1. **GENERAL**. Cover soil stability often becomes an issue for slopes of 4 horizontal on 1 vertical or steeper. Geogrids are reinforcement geosynthetics used in landfill covers and liners to hold cover soils in place on steep slopes. Geogrids are formed by intersecting and joining sets of longitudinal and transverse ribs with the resulting open spaces called apertures. Two different classes of geogrids are currently available: (a) stiff, unitized, geogrids made from polyethylene or polypropylene sheet material, and (b) flexible, textile-like geogrids made from high strength polyester yarns which are joined at their intersections and coated with a polymer or bitumen. Geogrids are classified as uniaxial or biaxial. Uniaxial grids provide reinforcement in one direction only while biaxial grids provide reinforcement in all directions.

Geotextiles are also used for reinforcement. Review Section 3.8 in addition to this section for QA inspection responsibilities for reinforcement geotextiles.

a. Preconstruction Submittals. The contractor should provide construction submittals as required by the specifications. The following is a list of typical submittal requirements.

- (1) Manufacturer's QC test results.
- (2) Manufacturer's QC manual.
- (3) Geogrid layout plan along with anchorage and connection details.
- (4) Pull-out resistance test results.
- (5) If mechanical geogrid connections are required, strength test results for the connections should also be submitted.
- (6) Sample of geogrid (if required).

b. Delivery, Storage, and Handling.

- (1) A QA Representative should be present during delivery and unloading of the geogrid to inspect for damage.
- (2) Verify that rolls are labeled with the manufacturer's name, product identification, lot number, roll number, roll dimensions and date manufactured. If the geogrid has a primary strength direction it should also be identified.
- (3) The QA Representative should record roll numbers, date delivered, name of manufacturer, and product type. This data is used to verify manufacturer's QC data sheets have been submitted for the rolls being delivered.
- (4) Reject any rolls of geogrid damaged during delivery, storage, or handling. No repairs should be allowed on damaged geogrid or reinforcement geotextile.
- (5) Do not allow rolls of geogrid to be dragged, lifted by one end, or dropped to the ground.
- (6) Temporary storage at the job site should be in a well

drained smooth area.

(7) The storage area should also be shaded or the geogrid should be placed beneath an opaque cover.

### 3.12-2. PRODUCTS.

Geogrid.

(1) Cross check the roll numbers of the geogrid delivered to the site against the roll numbers on the manufacturer's QC test data submittals to ensure they match. Ensure the geogrid meets the property requirements outlined in the specifications for material type and physical properties.

(2) Verify the pull-out resistance test results meet the strength requirements specified between the geogrid and adjacent soils.

(3) Verify the same soil borrow source was used for the pull-out resistance testing as will be used for full scale construction.

### 3.12-3. EXECUTION.

a. Installation.

(1) A QA Representative should be present at all times during geogrid installation.

(2) Do not allow personnel working on the geogrid to smoke or wear shoes that could damage the geogrid.

(3) Geogrid is usually unrolled down slope and kept in slight tension prior to cover soil placement.

(4) Check the plans and specifications to see how the upper end of the geogrid should be anchored. Proper anchorage is critical if the grid is to function correctly.

(5) Connections.

(a) Geogrid reinforcement may be joined with mechanical connections or overlaps. Check the specifications to determine which type of connection is required.

(b) Mechanical connections should be installed per the specifications and manufacturer's recommendations.

(c) Verify the mechanical connection strength meets the specified requirements.

(d) For overlap connections, check the specifications and manufacturer recommendations for minimum overlap requirements.

(e) Splicing rolls of geogrid together on slopes greater than 4 horizontal on 1 vertical should generally not be allowed. If permitted, the splices should be located as close to the bottom of the slope as possible.

(f) If connections are required on slopes, they should be

staggered (generally a minimum of 2 meters (6 feet)) above or below connections for adjacent rolls.

(g) The sides of adjacent geogrid rolls generally do not need to be overlapped for slope reinforcement. However, ensure 100 percent of the slope is covered with geogrid.

b. Penetrations.

(1) For pipe penetrations through the geogrid, only transverse members of the geogrid should be cut.

(2) Verify That the load carrying longitudinal (roll direction) members are spread around the penetration.

c. Covering. Refer to Chapter 3.9 Cover Soil Layer for information on cover soil placement.